

Mills and Bone Academy

Educational Article

What are the Best Herbs for Boosting Healthy Sleep? –

Kerry Bone

“Scientists have discovered a revolutionary new treatment that makes you live longer. It enhances your memory, makes you more attractive. It keeps you slim and lowers food cravings. It protects you from cancer and dementia. It wards off colds and flu. It lowers your risk of heart attacks and stroke, not to mention diabetes. You’ll even feel happier, less depressed, and less anxious. Are you interested?”

So writes Matthew Walker in *Why We Sleep: Unlocking the Power of Sleep and Dreams*. Scribner, An Imprint of Simon and Schuster, New York, USA, 2017.

“Human beings are the only species that deliberately deprive themselves of sleep for no apparent gain.” This quote is again from Matthew Walker, who goes on to assert:

“In terms of our natural sleeping tendencies, people can be divided into two broad groups, or “chronotypes”: morning larks and night owls. Each group operates along different circadian lines, and there is pretty much nothing owls can do to become larks – which is tough luck, because work and school scheduling overwhelmingly favour early risers.” Owls are often forced, he writes, “to burn the proverbial candle at both ends. Greater ill health caused by a lack of sleep

therefore befalls owls, including higher rates of depression, anxiety, diabetes, cancer, heart attack and stroke.”

Dr Michael J. Breus gives a dire warning concerning sleep deprivation: “Populations are at greater risk for a number of chronic diseases and mental health disorders, as well as challenges to daily life and relationships. These are dangerous and expensive problems.”¹ Hence from the perspective of natural therapies, improving sleep quality should not be just regarded as an end in itself. **Restoring healthy sleep forms an important core strategy for many health problems, as listed above.**

Our brain uses sleep to process the experiences of the day.

During NREM (non-rapid eye movement) sleep, we move information from short-term in the hippocampus into long-term memory. It frees up space in short-term memory for the next day and allows us to have access to past knowledge in the future.

During REM (rapid eye movement) sleep we now take this new knowledge and compare it to our total catalogue of past experiences and knowledge. This allows us to make connections

between things learnt in the past and this new knowledge.

Plus, another rather extraordinary thing happens: the area of our brain dedicated to rational thought goes offline. This allows us to make seemingly unrelated connections that consolidate our knowledge base and boost creative thinking.ⁱⁱ

During the night as we sleep, we move between REM and NREM sleep several times, a phenomenon that can be recorded by polysomnography. The resultant pattern is termed sleep architecture.

Improving sleep naturally might save lives!

In a widely publicised 2012 article, a group of US scientists found a strong association between the use of modern hypnotic drugs (sleeping pills) and increased risk of death. The study's principle author, Dr Daniel Kripke, had been interested in this association for more than a decade.

At least 24 published studies have examined mortality linked to hypnotic drug consumption, with 18 ($p < 0.05$) reporting significant positive associations.ⁱⁱⁱ The analysis of these by Kripke and co-workers was a matched cohort study to compare mortality and cancer risk of modern sleeping drugs (short-acting benzodiazepine agonists such as zolpidem, zaleplon and eszopiclone) with controls and older hypnotics.

Their results were both surprising and alarming. Participants (mean age 54 years) were 10,529 patients who received hypnotic prescriptions and 23,676 matched controls with no hypnotic prescriptions, followed for an average of 2.5 years between January 2002 and January 2007. Data were adjusted for age, gender, smoking, body mass index, ethnicity, marital status, alcohol use and prior cancer. Hazard ratios (HRs) for death were computed from Cox proportional hazards models

controlled for risk factors and using up to 116 strata, which exactly matched cases and controls by 12 classes of comorbidity (so that any confounding effect of a pre-existing health condition was controlled for).

Patients prescribed any hypnotic had substantially elevated hazards of dying compared to those prescribed no hypnotics. For groups prescribed up to 18, 18 to 132, and greater than 132 doses/year, HRs (95% CI, confidence intervals) were 3.60 (2.92 to 4.44), 4.43 (3.67 to 5.36) and 5.32 (4.50 to 6.30), respectively, demonstrating a dose-response association. HRs were elevated in separate analyses for several common hypnotics, including zolpidem, temazepam, eszopiclone, zaleplon, other benzodiazepines, barbiturates and sedative antihistamines. Particularly disturbing was the finding that receiving hypnotic prescriptions was associated with a greater than threefold increased hazard of death, even when prescribed at less than 18 pills/year. This association held in separate analyses for several commonly used hypnotics and for newer shorter-acting drugs.

While it should be stressed that cohort studies such as this one do not necessarily imply causality, it is possible that the use of hypnotic drugs is responsible for millions of early deaths worldwide each year. Certainly, in Kripke's opinion the risks of the use of such drugs now outweigh the benefits:

"The recommended doses objectively increase sleep little if at all, daytime performance is often made worse, not better, and the lack of general health benefits is commonly misrepresented in advertising. Treatments such as the cognitive behavioral treatment of insomnia and bright light treatment of circadian rhythm disorders might offer safer and more effective alternative approaches to insomnia."^{iv}

Clearly, it is time to seek safer alternatives to help patients improve their sleep. There are

many promising candidates among medicinal plants, as outlined below.

Matthew Walker explains in his book why the insomnia drugs might result in premature death. First, we need to accept the premise that these drugs do not fully create a genuine state of sleep, with all the features of REM and NREM sleep. Instead they create a state of sedation that mimics sleep. Hence the person who uses these drugs is in fact sleep deprived. A feature of anyone who is sleep deprived is that they are more prone to infections and road accidents, both significant causes of death.

In contrast, there are preliminary data that herbs can actually support sleep architecture, meaning they might represent the best and safest pharmacological option to treat insomnia and promote natural health-conferring sleep.

Classification of insomnia

The following basic differentiations are used to classify insomnia:

- Difficulty falling asleep (sleep onset insomnia)
- Awakening during the night and difficulty falling asleep (sleep maintenance insomnia). This is often characteristic of the adrenally-depleted patient and those with fibromyalgia syndrome
- Early morning awakening (sleep offset or terminal insomnia) that can be linked to depression or poor sleep quality. This is often classified as one aspect of sleep maintenance insomnia
- A sense of not having enough sleep (non-restorative sleep). This is often characteristic of chronic fatigue syndrome.

These different patterns of insomnia are treated differently when applying herbal therapy (see Table 1 below).

Key herbs for sleep: the evidence and clinical application

European valerian

Leathwood and Chauffard in the 1980s demonstrated that European valerian extract improved sleep latency and quality (versus placebo), but only in poor or irregular sleepers^v. Results from subsequent trials have been mixed, but overall do indicate a clear effect on subjective sleep quality.^{vi} Numerous earlier studies of valerian on its own or in combination with hops, passionflower and/or lemon balm have demonstrated improvements in sleep parameters in controlled clinical trials.

The Committee on Herbal Medicine Products of the European Medicines Agency concluded “.....that aqueous ethanolic extracts of valerian root have a clinical effect in sleep disturbances as assessed by subjective ratings as well as by means of validated psychometric scales and EEG-recordings..... There is quite strong evidence from both clinical experience and sleep-EEG studies that the treatment effect increases during treatment over several weeks”.^{vii}

Chaste tree and melatonin

According to Dioscorides (*De Materia Medica* AD 40 to 80), when writing about chaste tree:

“A weight of 1 drachma in wine makes the menses come on earlier, detaches the embryo, attracts the milk, goes to your head and **brings sleep**.”^{viii}

The circadian rhythm of melatonin secretion was measured in 20 healthy men aged 20 to 32 years following the intake of placebo or various doses of an extract of chaste tree for 14 days.^{ix}

In an open, placebo-controlled study, the doses investigated were 120 to 480 mg per day of the extract (corresponding to approximately 0.6 to 2.4 g of the dried berries per day). These were taken as divided doses at 8.00, 14.00 and 20.00 hours. The concentration of melatonin in serum showed the typical nocturnal increase, beginning approximately one hour after the light was turned off. Administration of chaste tree caused a dose-dependent increase of melatonin secretion when compared to the placebo treatment, especially during the night. Total melatonin output was approximately 60% higher in the group receiving chaste tree.

The authors observed that the feeling of fatigue or the promotion of sleepiness observed by some patients taking chaste tree during the trial might be a result of the stimulation of endogenous melatonin secretion. Indications for chaste tree should now include jet lag, sleep maintenance insomnia and disturbed day-night rhythm (as with shift workers).

Based on that research, this has become one of my most important clinical uses of chaste tree in both men and women, for which it is highly effective provided an adequate dose is used. For jet lag, higher doses are needed: up to 5 g per day. It is also valuable in some cases of sleep onset insomnia.

Zizyphus seed and insomnia

The key Chinese herb for insomnia is Zizyphus seed (Suan Zao Ren) or the spiny jujube. A recent systematic review of randomised controlled trials (RCTs) of Chinese herbal medicine for insomnia found Zizyphus seed was the most used (in 190 of the 217 identified clinical trials).^x Another systematic review of Zizyphus decoction on its own for primary insomnia found 12 clinical trials. The overall finding was Zizyphus was more effective than benzodiazepines, but trial quality was noted to be poor.^{xi}

St John's wort (SJW)

St John's wort might also boost melatonin. In an uncontrolled trial involving 13 healthy volunteers, a significant increase in the nocturnal melatonin plasma concentration was observed after 3 weeks of administration of SJW.^{xii} Sleep disorders, as well as anxiety and depressive agitation, were reduced by SJW extract in 240 patients suffering from mild-to-moderate depression with anxiety in a 6-week RCT.^{xiii}

Kava

Kava is not only the best herbal answer for anxiety, it also plays a very useful role in promoting healthy sleep with very little "hangover" effect the next day from its use (although this can occur to a mild extent in some people). There is also clinical evidence to back this up.

In a pilot RCT involving 12 healthy volunteers over 4 days, a placebo was taken for the first 3 days and followed the next day by three divided doses totalling either 150 mg kava extract (containing 105 mg kavalactones) or 300 mg extract (containing 210 mg kavalactones).^{xiv} With kava, the time to fall asleep and the light sleep phase were shortened, the deep sleep phase was lengthened, the duration of REM sleep was not influenced and the length of wakeful phases in sleep EEG recordings was decreased.

A later double blind, multicentre RCT assessed a kava extract in sleep disturbances associated with anxiety disorders in 61 patients.^{xv} The dose of kava extract used was 200 mg/day (containing 140 mg kava lactones) over a period of 4 weeks. Statistically significant group differences were demonstrated in favour of the kava group, as measured by the sleep questionnaire SF-B sub-scores 'Quality of sleep' and 'Recuperative effect after sleep' ($p = 0.007$ and $p = 0.018$, respectively). Superior therapeutic efficacy was also demonstrated for kava extract over placebo by way of the Bf-S

self-rating scale of well-being, the clinical global impression (CGI) and the Hamilton psychic anxiety sub-score ($p = 0.002$).

Passionflower

In the first RCT of passionflower for sleep (crossover design), 41 people found that a week of the tea (2 g in one cup one hour before bed) was better than placebo (parsley tea) in terms of subjective sleep quality.^{xvi} There was a significant improvement in sleep quality when taking the passionflower (5.2% mean increase relative to placebo; $p < 0.01$). No significant effects were found for the other parameters, although the participants had initially low levels of anxiety and only a small number had polysomnography recorded.

In a later RCT in 110 patients diagnosed with insomnia according to the DSM-5, 2 weeks of passionflower treatment significantly improved total sleep time, compared to placebo.^{xvii}

Mexican valerian

This herb is a highly underestimated option for treating insomnia and anxiety. Often the most positive feedback from patients suffering from these disorders is after they have taken Mexican valerian.

Valeriana edulis ssp. procera, commonly known as Mexican valerian, is widely used in Mexican traditional medicine for insomnia and anxiety. A crossover RCT ($n=20$) compared Mexican with European valerian at equal doses (450 mg of dry extract) administered one hour before lights out in a sleep laboratory.^{xviii} Mexican valerian reduced the number of awaking episodes, while both herbal treatments increased REM sleep; this last parameter was better improved by European valerian. Both herbs improved NREM sleep. Validated clinical tests also showed that both species reduced morning sleepiness and did not affect anterograde memory (loss of short-term memory).

Chemical analysis of the hydroalcoholic extract of Mexican valerian indicated that the extract contained 0.26 % of dihydroisovaltrate as the main valepotriate, and that it did not contain valerenic acid, which is a key active in European valerian. Hence, the two herbs are both phytochemically and therapeutically distinct, with Mexican valerian containing much higher levels of valepotriates.

Summary

The differential use of herbs for the various clinical patterns of insomnia is summarised in Table 1.

Worth noting is that tonic and adaptogenic herbs used throughout the day or before bed can help to break the vicious cycle of non-restorative sleep in stressed patients. Ashwagandha (*Withania*) can be a key herb for this.

While kava is still the mainstay for sleep onset insomnia, Mexican valerian is a highly effective option and represents a useful alternative to European valerian, with quite different phytochemistry.

However, the most significant recent development is the effective use of chaste tree for sleep maintenance insomnia and related sleep disturbances.

Table 1: Herbs and insomnia classification summary

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| <ul style="list-style-type: none"> • Sleep onset problems <p>Valerian, Kava, Mexican Valerian, Passion Flower, Zizyphus, Corydalis, Chaste Tree, Californian Poppy, Chamomile, Magnolia, Lavender, Hops</p> |
| <ul style="list-style-type: none"> • Sleep maintenance problems <p>St John’s Wort, Chaste Tree, Valerian, Kava, Licorice and/or Rehmannia, Magnolia</p> |
| <ul style="list-style-type: none"> • Restorative sleep problems <p>Withania, Rhodiola, Korean Ginseng, Licorice, Rehmannia</p> |

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